DOER Informational Webinar

2011 Regional Avoided Costs (AESC) Study:
Implications for 2012 Energy Efficiency Programs
- and -
Avoided Carbon Compliance Costs
For Massachusetts:
Background and Two Potential Options

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Regional 2011 Avoided Cost (AESC) Study

- Six New England States (ISO-NE area)
- Conducted every two years
- Provides consistent values for avoided costs throughout all New England states

- To be used for Energy Efficiency programs only
- Will be applied going forward for:
  - –2012 Mid-Term Modifications (MTMs)
  - –Next Three-Year Plans (2013-2015)

Slide from June 14 EEAC meeting

Estimated Effects of 2011 Avoided Costs

Estimates for 2012	2012 Base Case (using 2009 AESC Avoided Costs)	2012 with 2011 AESC Study Avoided Costs
Electric	100%	~100%
Gas	100%	~70%

- Does not account for recent evaluation results
- Does not account for revised non-energy impacts (NEI)

Programs Potentially Impacted

- Electric programs remain cost-effective
- Several gas programs may be challenged to remain cost-effective in 2012 (when analyzed as gas-only programs):
  - Residential New Construction
  - Mass Save/Weatherization (for some PAs)
  - Behavior/Feedback
  - Multifamily Low Income
- Indications above do not account for recent evaluation results or revised non-energy impacts (NEI)

Two Potential Options for Avoided Carbon Compliance Costs in MA

Carbon Compliance Costs in Massachusetts: GWSA

- The Global Warming Solutions Act of 2008 required the Secretary of Energy and Environmental Affairs to adopt a statewide greenhouse gas emissions limit for 2020 between 10 per cent and 25 per cent below the 1990 emissions level and a plan for achieving said reduction (and interim targets for 2030 and 2040 to attain an 80 percent reduction in emissions by 2050).
- The Secretariat prepared and, in December 2010, issued the Massachusetts Clean Energy and Climate Plan for 2020 (CECP), established 25 percent below 1990 emissions levels as the specific GHG emission limit for 2020, and proposed a strategic plan to achieve the emission reductions.

Carbon Compliance Costs in Massachusetts: DPU

- DPU 08-50-A, March 16, 2009:

  "The Department considers existing state law and likely federal measures to control greenhouse gases to constitute reasonably anticipated environmental compliance costs that will be reflected in future electricity prices in the Commonwealth. Consequently, the Department expects Program Administrators to include estimates of such compliance costs in the calculation of future avoided energy costs." p. 17

Carbon (CO_2) Values in AESC Studies: Valuation of Carbon is Not New to the AESC Studies

- AESC 2007: "…we believe it is reasonable to anticipate a marginal cost of control of $60/tCO2-eq for achieving a stabilization target that is likely to avoid temperature increases higher than 2° above pre-industrial levels" AESC 2007, p. 7-17; in 2007$

- AESC 2009: "…we recommend using a long-run marginal abatement cost (2009$) of $80 per short ton of CO2." AESC 2009, p. 6-75

- AESC 2011: "…we believe that it is reasonable to use an estimated long-term marginal abatement cost (LT MAC) of $80 per short tCO2 equivalent (2011$) in evaluating the cost- effectiveness of energy efficiency measures. This estimate is essentially the same as our AESC 2009 estimate for the LT MAC of $81.52 per short tCO2 equivalent (2011$)." AESC 2011, p, 6-99

AESC 2011 Scope of Work Included Compliance Costs

- Develop assumptions and identify methodology to estimate avoided costs… must account for the following:

  "The cost of compliance with current, enacted but not yet in effect, and expected federal, regional, and state emissions control requirements for NOx (including high electric demand days), SOx, carbon/CO_2, and mercury." RFP Scope of Work, p. 7

$80/ton Carbon Value in AESC 2011 Was Vetted During the Study Process

- May 11 Sponsor Group extensive discussion of topics, at which the Study Sponsors asked questions and requested additional language to clarify how the $80 per short ton was derived [in the draft at that time].
- No additional substantive issues on the derivation of proposed $80/ton carbon value were raised by the Study Sponsors during the study or the review of the drafts of the final report.
- Synapse's draft final report included the following language: "For states that have established targets for climate abatement or that are contemplating such action, the abatement cost specified above can be viewed as a reasonable high case on the long-term compliance costs of those emissions reduction activities intended to support the limit on global temperature rise to no more than 2°C above pre-industrial levels."

  File: "clean AESC 2011 Chap 6 20110623.doc"

A Massachusetts-Based Value for Carbon

- The $80/ton carbon value in the AESC report was derived from an examination of studies of carbon abatement at the national and international level. Estimates from the studies ranged from about $50 to $270 per short ton.
- There are circumstances in Massachusetts and in the region that may warrant the use of a value different from the $80/ton:

  - Massachusetts' climate strategies are guided directly from the 2020 Clean Energy and Climate Plan, and will rely on local and regional resources to attain the emission limit.

  - Natural gas is the fuel on the margin in the electric generating system. Because gas contains less carbon than coal or oil (more widely used throughout the U.S and the world), it will cost more to avoid a ton of carbon from gas than would be the case if the system were mainly supplied by coal and oil. For MA, the $80/ton value (based on national estimates) is lower than what may be necessary to support the CECP.

  - The $80/ton carbon value is based on studies that estimated the cost of carbon abatement to a 400-450ppm level of GHGs, which many scientists suggest may be too high of a level (350ppm is considered by many climate scientists to be a more realistic, though challenging, target to achieve no more than a 2° increase in temperature above pre-industrial levels).

A Massachusetts-Based Value for Carbon: the ACP

- The RPS Class 1 Alternative Compliance Payment (ACP) may be an appropriate value for the avoided carbon compliance cost for use in the energy efficiency screening analyses for use in the 2012 Plans (MTMs) and the upcoming 2013-2015 Three-Year Plans.
  - The value was developed through an open process and thus vetted by MA stakeholders and the legislature.
  - It is a value the Commonwealth has declared as an acceptable amount to be paid for the acquisition of clean energy, which would be the most obvious carbon emissions reduction strategy on the margin to meet the GWSA/CECP emission limit.
  - The value is above the $80/ton and thus encompasses the application of the circumstances noted above.

Avoided Carbon Compliance Costs
Electricity, Retail Gas, Fossil Fuel

Fuel	AESC $80/Ton	MA ACP
Electricity ($/kWh)		
Total	$0.0440	$0.0621
Internalized in avoided energy cost	$0.0010	$0.0010
Non-internalized in avoided energy cost	$0.0430	$0.0611
Retail Natural Gas ($/MMBtu)		
Residential	$4.72	$6.66
Commercial	$4.72	$6.66
Industrial	$4.72	$6.66
Fossil Fuel ($/MMBtu)		
Residential	$6.92	$9.77
Commercial	$6.56	$9.26
Industrial	$6.44	$9.09

Initial, first year values above; non-internalized values are lower after 2017

Estimated Effects of 2011 Avoided Costs and Avoided Carbon Compliance Costs

Estimates for 2012	2012 Base Case (using 2009 AESC Avoided Costs)	2012 with 2011 AESC Study Avoided Costs	With $80/Ton Avoided Carbon Compliance Cost	With MA ACP Avoided Carbon Compliance Cost
Electric	100%	~100%	~120%	~135%
Gas	100%	~70%	~105%	~115%

- Does not account for recent evaluation results
- Does not account for revised non-energy impacts (NEI)